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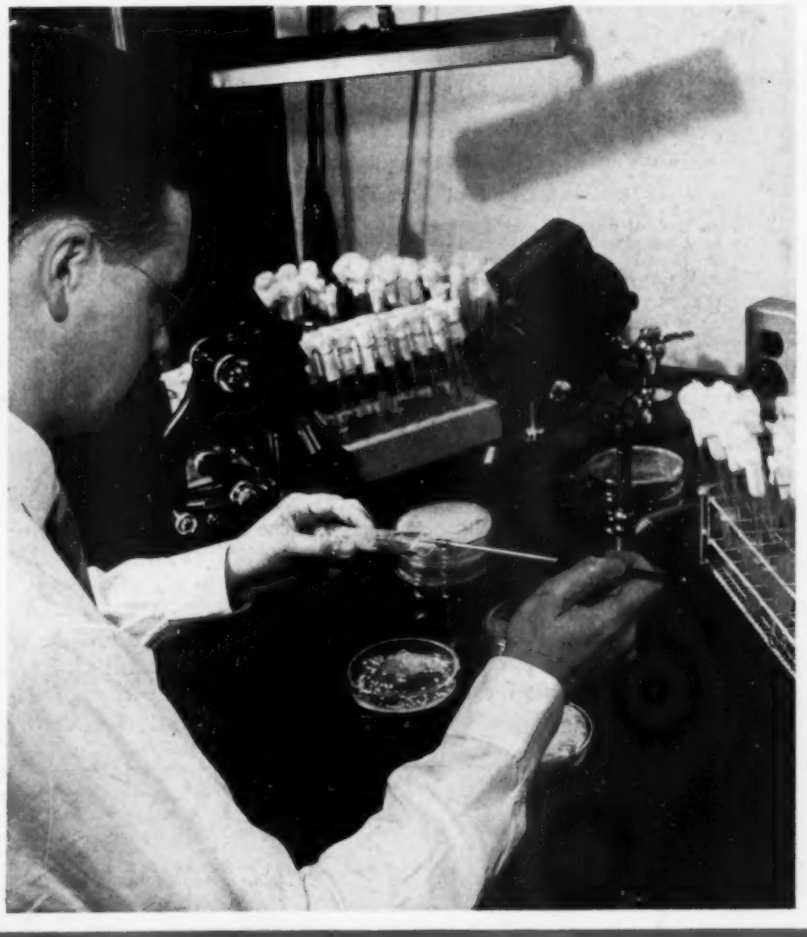
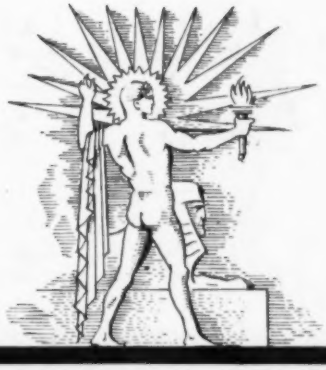
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •





August 1, 1942

Bacteria in War Production

See Page 71

A SCIENCE SERVICE PUBLICATION

Do You Know?

Munitions require the same chemicals that go into the production of photographic films.

A new arrangement of *steam piping* enables modern engines to haul trains of 100 loaded freight cars.

Bicycle traffic problems are regulated in some cities by *bicycle courts* whose "judges" are high school boys.

Two rootstocks have been discovered which are resistant to the *oak root fungus*, a disease which takes heavy toll of fruit and nut trees.

The U. S. Board of Geographical Names is busy assigning new names to *lakes* in Wisconsin, where there are 59 Bass Lakes, 40 Long Lakes, and 36 Mud Lakes.

A plastic originally adapted for *housing* a cake-mixer, because of its unusual resistance to heat and vibration, may prove useful in housing many other types of motors.

Allied shortwave broadcasts are suggesting to radio listeners in the Indies that they can circumvent Japanese news censorship by employing native *tomtom* signals to transmit messages.

A giant 20-inch diameter cathode-ray *oscillograph* recently developed permits critical study of intricate oscillograms, as well as a far better means of demonstrating oscillography in classrooms.

Question Box

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What serious poultry disease is treated with a new sulfur compound? p. 72.

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

Resin from flowering tops of the *hemp* plant forms the basis of a number of drugs, among them hashish, ganja and marihuana.

Two-thirds of the 11,000,000,000 pounds of *fats* and oils consumed in America, each year, goes for food; one-fifth for soap.

Food preservation specialists discourage use of *canning powders* or preservatives as being unnecessary and sometimes harmful.

Someone has taken the trouble to figure that the annual U. S. *milk* supply would fill a river 3,000 miles long, 40 feet wide, and 2½ feet deep.

SCIENCE NEWS LETTER

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BIOLOGY

Colchicine Injections Change Chromosomes in Fruit Flies

Exceedingly Fine Hypodermic Needle, Filed Down, Used To Inject Into 3-Day Larvae in Region of Brain

COLCHICINE, the "evolution chemical" that has been producing amazing results in plant breeding during the past few years, has now broken into the hitherto closed field of changes in animal cells, in experiments on fruit-fly larvae performed in the biological laboratories of the Catholic University of America, by Dr. Dale C. Braungart and Rev. C. E. Ott.

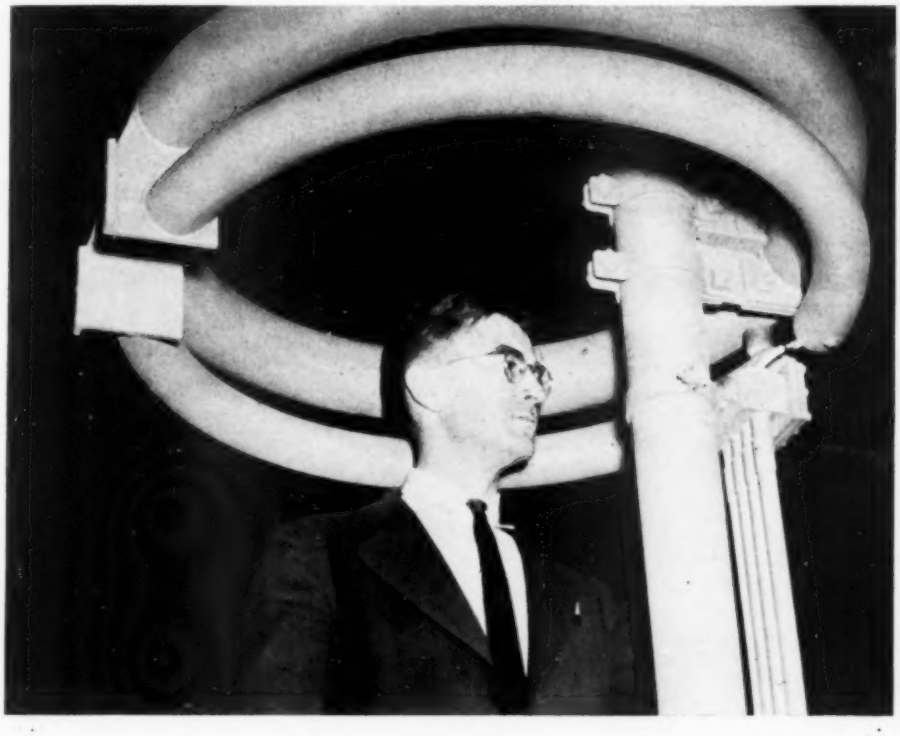
The two zoologists used very young larvae, or grubs, of the common fruit-fly, favorite insect guinea-pig of genetic studies. When the larvae were about three days old, they injected the colchicine into the region of the brain, using an exceedingly fine hypodermic needle attached to a small rubber tube as a syringe.

"We filed the needle down, some," admitted Dr. Braungart.

Cells in certain limited parts of the brain were later found to have undergone doublings in the number of chromosomes, the heredity-bearing bits of specialized protoplasm within the nuclei. Similar increases in chromosome numbers in plants, induced by colchicine treatment, have been followed by radical changes in the whole bodies of plants of the following generation, and these changes have been regarded as evolutionary "jumps" or mutations by some biologists.

However, efforts to produce like increases in chromosome numbers in animal cells have hitherto had scant success. Either the colchicine would have no effect at all, or it would kill the animal cells outright. So, although fruit-flies are zoologically very remote from backboned animals, at least they do belong to the animal kingdom, and thus represent a "toe in the door," giving hope for further experiments.

Science News Letter, August 1, 1942



FOR FM

This novel looking radio antenna, developed by M. W. Scheldorf, General Electric engineer and exhibited at the Institute of Radio Engineers summer convention in Cleveland, is designed to provide equal radiation of the radio waves in all directions horizontally. To produce this equal radiation for frequency-modulation radio transmission, it was previously necessary to install more complicated and costly antenna arrangements.

METALLURGY

Silver in Place of Tin Recommended for Solder

LEAD-SILVER in place of lead-tin soldering for tin cans is one of the recommendations of the War Metallurgy Committee and its Advisory Committee reported by Dr. Frank B. Jewett, president of the National Academy of Sciences, in a survey of the work of the two committees for the past eighteen months.

The substitution of lead-silver for lead-tin solder has been made in some fields. But in certain canning processes, difficulties are encountered which must be overcome by research before the substitution in this field can be ordered, the report stated. Nevertheless, since a large proportion of the total consumption of tin is still used in soldering, such substitution in the canning industry is urgently needed.

The War Metallurgy Committee has at its disposal for war work more than 10,000 metallurgists in this country, research men, technicians, engineers. Their combined experience represents well over 125,000 man years. Heads of industries, university and research organizations also contribute their knowledge and experience. The results of Canadian and English research are made available.

The Committee functions as a nerve center for the coordination and correlation of all this work, preventing duplications and mistakes and thus saving time and money. It portions out the work to various sub-committees and to organizations and groups best suited to carry on the particular kind of work needed. It serves also as a clearing house for the appraisal of new thoughts, new ideas, new short-cuts that may come from anywhere—and are coming in fast.

The chairman of the War Metallurgy

Committee is Dr. Clyde Williams, director of the Battelle Memorial Institute, Columbus, Ohio; with Dr. Zay Jeffries, of the General Electric Company, as vice-chairman, and Louis Jordan, as executive secretary.

Science News Letter, August 1, 1942

MEDICINE

Assembly Line Method Applied to Sun Bathing

MINERS at the Manvers Main Colliery in England now get daily sun baths by an assembly line method called both "revolutionary" and "unique in this country" by its designer, Dr. William Beaumont, of London, England, in a report to the *British Medical Journal* (June 13).

The miners, after their shower-bath, pass through a door and step onto a conveyor belt which carries them along a corridor which has mercury vapor arc lamps along its walls to deliver ultraviolet light. At the end of the corridor the men step off the conveyer and pass through a door to their clean clothes locker.

The assembly line sun bath is capable of providing sun baths for 50 workers every five minutes. It provides a minimal dose of the artificial sunshine, designed not as treatment but as a prophylactic measure to keep the men in good health in spite of lack of exposure to natural sunlight. The equipment is put into operation by throwing a single switch. Any defect or breakdown automatically breaks the electrical circuit supplying the apparatus.

The problem of providing artificial sun baths for factory and other workers as well as miners who work long hours under artificial light and lack opportunities for spending the week-ends in the open "for some time has been exercising the minds of those responsible for the health of the workers and also those whose main concern is production," Dr. Beaumont points out.

Both the Germans and Russians, he adds, faced this situation long before the war. The Krupps mines at Essen, he says, have a "splendid installation" built in the early days of the Hitler regime and the value of sun baths in factories was recognized in Russia years ago.

Science News Letter, August 1, 1942

In some states 1942 *auto licenses* will be renewed by windshield stickers for 1943 use.

MEDICINE

Cancer Institute's Personnel At Disposal of War Agencies

Chief of Institute Also Announces Now Possible To Convert Normal Mammalian Cells into Cancer Cells

THE NATIONAL Cancer Institute has been authorized by the National Cancer Advisory Council to put "at the disposal of the appropriate war agencies the facilities and personnel available for research aiding the war effort," it was announced following the Council's meeting.

Dr. Carl Voegtlin, chief of the National Cancer Institute, reported work showing for the first time that it is possible to convert normal mammalian cells growing outside the body into cancer cells. This was done by exposing the normal cells to the action of powerful cancer-causing chemicals. It is expected to aid understanding of how cancer is caused in the human body. The experiments were started in 1936 by Dr. Voegtlin and Dr. Wilton Earl.

Four grants-in-aid, totalling $21,300, were made to the Chicago Tumor Institute, the University of California, Cornell University and Michael Reese Hospital, Chicago.

Science News Letter, August 1, 1942

ENGINEERING

New Sources of Ultraviolet Several Times More Effective

Chemical Coatings on Bulbs or Tubes Transform Wavelengths and Increase Brightness of Fluorescence

TO AID America's war effort, new sources of ultraviolet or black light have been perfected which cause fluorescent materials to glow several times more brightly than previously possible, E. W. Beggs, Westinghouse lighting engineer, told the American Optical Society meeting at the Massachusetts Institute of Technology.

The new sources, which range from a walnut-sized bulb to a four-foot glass tube, use a new chemical coating that transforms short-wave ultraviolet to near ultraviolet. Chemical coatings also sift out the visible light.

Fluorescent materials glow when illuminated with ultraviolet light and cease to glow when the black light is turned off.

Thus an ultraviolet spotlight may pick up fluorescent markings in the dark which until then had been invisible. Maps, which must be read under blackout conditions, can actually be made to glow in several different colors. Fluorescent dials in an airplane will glow without the glare that might attract the attention of the enemy, and even this glow can be dimmed or extinguished at a moment's notice.

Phosphorescent materials, on the other hand, are like storage batteries of light. Activated for less than one minute by the ultraviolet light, they continue to glow for several hours afterwards. Other artificial sources may be used for this activation, but none is so efficient as the new mercury vapor fluorescent lamp.

Trail-blazing with fluorescent powders or paints is another one of the important new possible uses for black light, Mr. Beggs reported. By this method, markings left on trees, stones and bushes remain invisible until picked out in the darkness by ultraviolet spotlights.

Science News Letter, August 1, 1942

Testing is now being conducted to determine the practicality of canning *cheese*.

PUBLIC HEALTH

Remarkably Low Wartime Death Rate in England

Most Important Increases in Disease Death Rates Were For Tuberculosis, Meningitis, Whooping Cough

A "REMARKABLY good wartime" death rate was registered in England and Wales during 1941 and the first three months of 1942, Dr. Percy Stocks, Medical Statistical Officer of the General Register Office, declares in a report to the *British Medical Journal*.

For 1941 the death rate, including violent deaths caused by the war, was 12.9 per 1,000 population. For the first three months of 1942, a period which almost invariably registers a higher death rate than the year as a whole, the total death rate, including deaths from violence, was only 14.8 per 1,000. For this same quarterly period in 1939, the rate was 15.1; for 1940, 19.9; for 1941, 17.5.

Even better index of the health of the country is the death rate from disease, which was 11.7 per 1,000 in 1941. During the same year, the United States, with the lowest death rate in the history of its death registration states, registered a rate of 10.5 per 1,000, according to figures just released by the U. S. Census Bureau.

The infant death rate in England and Wales for 1941 was 58 per 1,000 live births. For the first quarter of 1942 it was 61, the lowest ever recorded in any March quarter.

The birth rate was 14.2 per 1,000, compared with 14.9 per 1,000 in 1939 and 14.4 in 1933, the latter being the lowest hitherto recorded.

Most important increases in deaths from disease during 1941 were for tuberculosis, meningitis (cerebrospinal fever in the English records), whooping cough and dysenteries and paratyphoid fever.

"Tuberculosis has given rise to some anxiety," Dr. Stocks states.

Infectious diseases registering decreases, despite the war, are typhoid fever, scarlet fever, erysipelas, gonococcal infections, late syphilis and, among males only, recent syphilis, rheumatic fever, ear and mastoid disease, two kinds of heart disease (pericarditis and acute endocarditis), diseases of the mouth and pharynx, gastritis, appendicitis, and infections of childbirth.

For pneumonia, bronchitis and the like, "the cold winters and the conditions imposed by aerial warfare were unfavorable both in 1940 and 1941," Dr. Stocks reports.

These offset the benefits of sulfa drug treatment of lobar pneumonia, so striking in 1938 and 1939, but the set-back has not been considerable, he continues. Bronchitis and bronchopneumonia, on the other hand, showed an excess of deaths in 1941, though not nearly so pronounced as in 1940.

Other diseases from which there was a noteworthy increase in deaths include: pernicious and other anemias, hemorrhagic diseases, Addison's disease, cerebral hemorrhage, heart diseases, epilepsy, mental disorders and ulcer of the stomach and duodenum.

Decreases, despite the war, were registered for gall-stones and diseases of the gall bladder, pancreas, bladder and genital organs in both sexes; gout and diseases of the veins, skin, bones, joints and muscles in men; exophthalmic goiter, cirrhosis of the liver and toxemias of pregnancy in females; prematurity and birth injury in infants.

Science News Letter, August 1, 1942

NUTRITION

Roses Yield Vitamin C To Enrich British Diet

THE OBVIOUS fondness of wild birds for dog-rose hips caused British scientists to analyze these berries and led to the discovery that the hips have 20% higher vitamin C content than oranges, a fact of great importance now that foods containing vitamin C are scarce in Britain.

Many people living in country districts have collected quantities of these berries for making into jam and puree, the latter to be used during the winter months for soup or "cocktails." It is said to have a flavor similar to that of the best tomato puree.

Science News Letter, August 1, 1942

SMALL PROTECTOR

This huge sky transport, the new 25-ton Curtiss Commando, designed to speed large numbers of troops, one or more jeeps, and field artillery to critical battle areas, makes its fighter escort, the new Curtiss Warhawk, look tiny in comparison.

PHYSICS

Avogadro Number Remeasured Differs From Textbook Value

Figure Represents the Number of Molecules in a Mass of Matter Equal to Its Molecular Weight

NEW measurements of the number of molecules in a mass of matter equal to its molecular weight, known as Avogadro's number (thus for monatomic hydrogen a mass of about one gram), confirm the accuracy of recent previous measurements, and their departure from an older, long-accepted value still carried in many textbooks.

The new measurements were made by Dr. R. T. Birge, professor of physics at the University of California, and reported at the meeting of the American Physical Society in Berkeley, Calif.

The latest Avogadro number, average of several determinations, is 6.02331 multiplied by 10 to the 23d power, which is 1 with 23 zeros written after it. Or we may say the number is 602,331 billion billion. This is the number of molecules contained in something less than an ounce of aluminum or in about a half a pound of iron. If all the inhabitants of the globe, about 2 billion, were to forget the war and start counting the molecules in an ounce of aluminum, and each counted at the rate of one a second and worked 8 hours a day, we should be blessed with universal peace for the next 30 million years.

The previously accepted value of Avogadro's number was 6.0230 times 10^{23}, also obtained by Dr Birge in 1936 as the most likely value based on all previous measurements.

The figure still appearing in many textbooks is 6.064 times 10^{23}, which was also obtained by Dr. Birge in 1929 as a correction to the earlier value (1913 and 1917) of 6.062 computed by Dr. R. A. Millikan of California Institute of Technology. These figures were based on the famous oil drop experiment by which Dr. Millikan determined the existence of the electron and the value of its charge. Previous to 1913, scientists had only a very vague idea as to the magnitude of Avogadro's number. They knew definitely only that it was the same for all substances, a universal constant, of which there are only about a dozen.

Various methods other than that of the oil drop have been tried, but the most modern and most accurate is an X-ray analysis of crystals, using X-rays of known wavelength. This is the method used by Dr. Birge. He complains, however, that nearly all of the previous measurements of this sort were made on the crystal calcite, because this was the only one the properties of which, particularly the density, were known with sufficient accuracy. Recent accurate determination of the densities of lithium fluoride, rocksalt and the diamond made it possible for Dr. Birge to use these substances. Only the most perfect crystals were selected, and the results they gave agreed very closely. The unweighted average 6.02331 differed by less than 1 part in 10,000 from the value he obtained from calcite, 6.02276. These numbers, it is understood, are all to be multiplied by 10^{23}, or 100,000 billion billion.

Science News Letter, August 1, 1942

MILITARY SCIENCE

Planes and Tanks Have Made Heavy Artillery Obsolete

NO MORE Big Berthas, no more super-long-range guns such as those that shelled Paris in 1918, not even any more 14-inch naval guns mounted on railroad cars. Planes and tanks have made them obsolete.

That is the belief of Col. Henry W. Miller, chairman of the department of mechanism and engineering drawing at the University of Michigan, set forth in the gun-makers' technical journal, *Army Ordnance*. (July-August)

Tanks make long-range firing unnecessary by rushing fire-power of machine-guns and light artillery up to front-line positions and on through to command headquarters and traffic nerve centers in the rear. Heavy bombers and Stukas deliver the explosive equivalent of heavy shells at longer ranges than any cannon, even of the specially designed freak-gun class, can possibly deliver them. Infantry, travelling in trucks and "cat-treaded" vehicles themselves, carry a great deal of artillery fire-power right with them, in the shape of mortars and light howitzers.

What will the artillery of the immediate future consist of? Col. Miller answers: almost anything that will destroy tanks and airplanes, because it must defend itself against these or be destroyed by them. Beyond that, artillery mobile enough so that its transport will not interfere with rapid movement of large army units. This means guns up to the caliber of about six inches, but not much beyond. Such pieces have considerable value because they can plant themselves solidly and pound, pound, pound away at objectives behind the firing front, such as roads up which supply trains must move. But even the six-inch longer-range guns may have disappeared in the next two years, Col. Miller adds.

"Mobility will be the urge to the point of obsession, and rightly so; for he who can move himself and all his equipment most rapidly, dependably, and for the greatest distances has the best chance of avoiding destruction and of being the victor."

Science News Letter, August 1, 1942

POPULATION

Africa May Take Europe's Surplus Population

AFRICA may play the role in the last half of the 20th century, and the beginning of the 21st, that America played in the 19th as absorber of Europe's population surpluses, suggests Prof. Frank J. Klingberg of the University of California at Los Angeles. Prof. Klingberg feels that one reason for the relatively peaceful state of the world for a hundred years after Waterloo was the availability of open lands in America, Australia and New Zealand for people crowded out of Europe.

Africa, although the second of the continents in area, has a population of only 150,000,000, he points out, and he is of the opinion that it could support at least double that number. Recognizing the existence of race-adjustment problems, he believes that they can be solved.

Nor would the migration of large numbers of white people to Africa necessarily mean the decline of the Negro race in its home lands, according to Prof. Klingberg. On the contrary, he is of the opinion that Africa needs and can adequately support a much larger Negro population than it now has.

Science News Letter, August 1, 1942

PSYCHIATRY

Alcoholism No Problem When Soldiers Have a Good Time

Army Psychiatrist Recommends Encouraging Drinking In Moderation Among Men; Only Few Are Alcoholics

THE PROBLEM of "Alcoholism in Military Service" has two aspects, according to Major Merrill Moore, Army psychiatrist, in *The Military Surgeon* (July), but apparently neither one would be solved by prohibition.

The first problem is the small percentage of real alcoholics who still get into the armed services, either because of the inadequate time allowed for psychiatric examination, or because their relatives are so anxious to get rid of them that they do not give correct information to the examining officers.

But the alcoholic is a sick man, says Major Moore, just as a diabetic patient is sick, and the Army cannot use either one.

"The public must learn that the qualifications for success in the Army are essentially the same as in any other profession," he states. "Stable and mature persons are needed."

If this had been fully recognized in the last war, he points out, there would be fewer alcoholics and drug addicts being cared for in Veterans' Hospitals today.

The second problem is excessive drinking among enlisted men, due to lack of sufficient activity and recreation. One officer quoted by Major Moore told how this problem had been solved. Opportunities were provided for swimming, tennis, bowling, etc., through clubs and social groups. Dances, parties and picnics were planned.

"We found that the more we saw to it that the fellows had a fairly good time, the less difficulty they had with the sort of desperate and destructive drinking that military men sometimes go in for," Major Moore quotes this officer as saying.

As for the question of whether or not beer should be sold near military posts, Major Moore thinks emphatically that it should, and that drinking in moderation should be encouraged. "Not alcohol, but the intemperate use of alcohol, is the problem in the Army as well as in civilian life."

This applies to the training period, when enlisted men need relaxation, but not to active war duty when a soldier needs heightened efficiency. Although listed as a stimulant in some of the old textbooks, alcohol is actually a depressant, explains Major Moore. Unlike the Continental soldiers who were given rum rations, our modern streamlined Army gets no alcohol while on duty.

While the "man who cannot live without alcohol" is an exception, taking liquor away from him is no solution. He is still a sick man, with drinking merely a symptom of his illness. He needs psychiatric care, and the Army is no place for him. Major Moore says that great strides have been made since the last war, not only toward keeping the alcoholics out of the armed forces, but also toward providing more adequate psychiatric measures of prevention and cure in civilian life.

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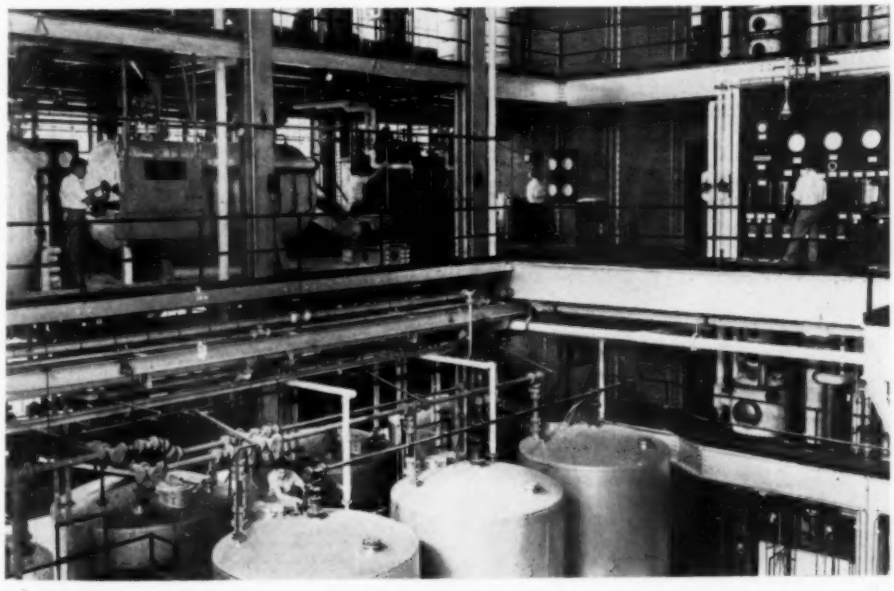


PILOT PLANT

Here is being tested on a semi-commercial scale the making of alcohol from various plentiful farm products such as corn and wheat. It is possible that a way may be developed to turn the butylene glycol, formed here from farm products, into artificial rubber.

CHEMISTRY

Method for Making Butylene Glycol Developed by U. S.

See Front Cover

A SHORT and economical process for making the relatively rare chemical butylene glycol has been developed at the U. S. Department of Agriculture's Northern Regional Research Laboratory at Peoria, Ill.

By the fermentation of plentiful farm crops, such as corn and wheat, the butylene glycol is now being produced on a pilot-plant or semi-commercial scale.

The chemical has a number of industrial chemical applications for war industries. It may be used in making antifreeze for automobile radiators and in the production of commercial solvents.

The laboratory is also studying butylene glycol as a possible link in the production of butadiene for synthetic rubber.

The illustration on the front cover of this week's SCIENCE NEWS LETTER shows Dr. Lynferd J. Wickerham selecting the bacteria that will convert corn into butylene glycol.

Science News Letter, August 1, 1942

Each of the 200,000,000 cells in a cubic inch of *cork* holds imprisoned a microscopic bit of air.

MEDICINE

Warns Against Use of Sulfathiazole in Skull

WARNING against use of sulfathiazole within the skull, which surgeons might consider as a means of fighting infection in war wounds of the head and brain or in operations for removal of brain tumors, appears in the *Journal, American Medical Association,* (July 18).

Convulsions and even death may result.

Experiments showing clearly the danger are reported by Dr. Cobb Pilcher, Dr. Ralph Angelucci and Dr. William F. Meacham, of Vanderbilt University School of Medicine. They refer also to a report from English surgeons of five patients who developed epileptic seizures, two of them dying, after sulfathiazole had been placed on the frontal portion of the brain to fight infection during brain operations.

Sulfanilamide and sulfadiazine apparently do not have as irritating an effect on the brain, but the Vanderbilt surgeons also caution against the use of these drugs in brain surgery until more is known about their action through microscopic studies now under way.

Science News Letter, August 1, 1942

NUTRITION

Not Enough Vitamin A In Average Infant's Diet

THE AVERAGE diet of babies from three weeks to six months of age does not supply enough vitamin A for maintaining optimal concentrations of the vitamin in the blood, Dr. J. M. Lewis and Dr. Oscar Bodansky, of New York, declared at the Gibson Island Conference on Vitamins, Gibson Island, Md.

The average diet given to infants over six months, however, does supply enough of the vitamin, their studies showed.

This vitamin is required for growth and good health generally, and also to prevent night blindness or poor dark adaptation of the eyes. Growth, resistance to infections and dark adaptation, however, are not as good criteria of the body's vitamin A stores as measurements of the concentration of the vitamin in the blood.

The New York scientists found that this last measurement is "the best single criterion available at present for the diagnosis of vitamin A deficiency."

Reason why so little night blindness has been found in children and adults in recent surveys, when many were believed to be eating poor diets, is that dark adaptation becomes impaired only when the diet is markedly reduced in vitamin A. The last finding was made on investigations with rats.

Optimal growth, these studies showed, occurred in the rats when the vitamin A content of the diet was 5 to 12 times the minimum requirement. Optimal concentration of the vitamin in the blood was observed when the vitamin intake was 12 to 25 times the minimum requirement. Good storage of the vitamin in the liver was noted at an intake of 50 times the minimum requirement.

Science News Letter, August 1, 1942

PALEONTOLOGY

Collection of Fossils Stranded in Honduras

OIL and steel and other war materials are not the only things whose movement is hindered by the U-boat menace. The progress of science is held up as well. A large collection of fossils of Ice Age and earlier date, collected by an expedition of the Field Museum of Natural History in Honduras during the years immediately preceding the outbreak of the war, is having to remain in storage in that country for the duration, "because of the uncertainty of water transportation," Paul O. McGrew, paleontologist of the Museum, reports (*Science,* July 24). As a consequence, questions of the existence of a land bridge between the Americas at that remote period remain unanswered.

Science News Letter, August 1, 1942

VETERINARY MEDICINE

Chickens Saved From Ill By New Sulfur Compound

CHICKENS can be saved from one of the most serious diseases that decimates poultry flocks with a new sulfur compound, one of 11 tried out by du Pont chemists and tested at the University of Wisconsin.

Both disease and drug have very formidable-looking names. The malady is known as cecal coccidiosis; it is caused by a species of protozoa, or one-celled parasitic animals. The chemical is called tetraethyl thiuram monosulfide. Its action is preventive rather than curative. Further experiments are to be conducted before the new chicken-drug is considered ready for general use.

Science News Letter, August 1, 1942

IN SCIEN

ORNITHOLOGY

New Hall of Birds to Be Opened in Philadelphia

A NEW hall of birds will soon be opened by the Philadelphia Academy of Natural Sciences. It is named in honor of John Audubon, famed ornithologist and painter of birds.

The new setting for the birds of the world has been under construction for the past four years. Specimens are shown in natural postures against backgrounds simulating their natural habitats.

Members and friends of the Academy are financing the project.

Science News Letter, August 1, 1942

PHYSIOLOGY

Baldness Ascribed to "Ivory Domes" in Men

"IVORY domes" are the answer to why some people grow bald and why more men than women lose their hair, Dr. Frederick Hoelzel, of Chicago, reports (*Journal, American Medical Association,* July 18).

He found this answer, he states, when removing the brains of about 80 cadavers for neurology classes at the College of Medicine of the University of Illinois in 1916-1917.

"Baldness occurred," he reports, "in persons in whom calcification of the skull bones apparently had not only firmly knitted the cranial sutures but also closed or narrowed various small foramens (openings) through which blood vessels pass, most prominently in persons with a luxuriant crop of hair."

Since bone growth or calcification is generally greater in males than in females, Dr. Hoelzel continues, this explains why men are more likely to become bald than women.

"Obviously 'hair tonics' or vitamins," he concludes, "are not likely to restore a blood circulation through what has practically become 'solid ivory.' Moreover, one wonders whether the promotion of a higher calcium intake among adults may not eventually increase the incidence of baldness."

Science News Letter, August 1, 1942

E FIELDS

ICHTHYOLOGY

First Aid Saves Fathead, A Real and Rare Fish

FIRST AID, promptly and persistently administered at the Scripps Institution of Oceanography, saved the life of a fathead.

No, the poor fish wasn't of the two-legged variety, venturing beyond his depth on the beach. He was a real fish, and a rare one at that, brought to the Institution in a gunnysack and apparently gasping his last. C. W. Palmer, aquarium attendant, massaged the fathead's gills for two hours, at the same time letting water flow over them. Finally the fish "came to" and took charge of its own respiration from there on. It is now one of the prize exhibits in the Institution's aquarium.

The fathead, which bears the formidable scientific name of *Pimelometopon darwinii,* comes from the Galapagos islands, and is rare even there. It is a vivid pink fish, two feet long, with a lumpy projecting forehead, thick lips and sharp teeth. It attracts considerable attention through its ability to chew up mussels and spit out the shells.

Science News Letter, August 1, 1942

GENERAL SCIENCE

War Training Program Should Aid Women Students

URGING fuller utilization of American colleges and universities toward winning the war, a conference of officers of leading educational institutions meeting in Baltimore pointed out what they held to be weaknesses in the war-education program now in effect, in a communication handed to four directly concerned government leaders.

Specifically, the conference criticized the failure of the present war-training program to aid any but male students physically qualified for active military duty. Similar aid should be given, it was declared, to young women, as well as to young men who may not be able to serve at the battle-front but are nevertheless in position to contribute toward victory through exceptional talents in research and leadership on the home front. The statement stressed a declaration that "Economic status, race, or creed should not be allowed to restrict the training of adequate, skilled manpower at the college level for the war program."

Identical copies were placed in the hands of Secretary of War Henry L. Stimson, Secretary of the Navy Frank Knox, Hon. Paul V. McNutt, chairman of the War Manpower Commission, and Gen. Lewis B. Hershey, director of the Selective Service System, by Dr. George F. Zook, president of the American Council on Education.

Science News Letter, August 1, 1942

NUTRITION

U. S. Government Buys Huge Quantities of Juices

OVER a half million gallons of concentrated citrus juices have been ordered by the Government in Florida alone in an attempt to avoid scurvy outbreaks among the peoples at war due to vitamin C deficiencies.

Improved methods of processing the fruits have been developed by the U. S. Citrus Products Laboratory. A large plant to be used for this purpose has just been completed for the U. S. Department of Agriculture. The concentrated juice is now being put into medicine bottles for rationing to British children.

By preparing the vitamin in concentrate in a special vacuum chamber a thick flavorful syrup is obtained which contains 85% of the original vitamin content.

Science News Letter, August 1, 1942

METALLURGY

Iron Can Replace Nickel And Copper for Printing

ALL of the nickel and at least a third of the copper used in printing plates, can be replaced by iron, the National Bureau of Standards has found through research conducted in cooperation with the Government Printing Office.

About 10,000 pounds of nickel and 350,000 pounds of copper are normally used every month by the printing industry in the manufacture of printing plates. Much of these strategic metals could be saved by the substitution of iron.

The iron can be electroplated onto stereotypes and copper electrotypes, or true iron electrotypes can be made on wax and lead molds.

Science News Letter, August 1, 1942

ENTOMOLOGY

Chiggers and Jiggers Not the Same Thing

CHIGGERS and jiggers, both very annoying "bugs," are not at all the same thing, Maj. John E. Weigel, Army surgeon, points out. (*Infantry Journal*) Chiggers are the larval form of ground-dwelling mites, that invade the human skin during a certain stage of their growth. Jiggers are true insects, better known perhaps as sandflies. They are bloodsucking biters, and the females, exceedingly tiny pests, are also skin-invaders when they have families to raise.

Both chiggers and jiggers can be repelled with sulfur, applied to the skin before going into places haunted by the pests. Direct use of powdered sulfur is inadvisable because it is very likely to cause skin irritation itself. Sulfur mixed with various kinds of ointments and vanishing creams has been tried with success. Another trick is to wet yourself all over with a strong solution of photographers' hypo, and let it dry on the skin before putting on your clothes.

Science News Letter, August 1, 1942

STATISTICS

Young Couple's Chances For Golden Wedding Double

THE YOUNG bridal couples of today have twice the chance of celebrating their golden wedding anniversary that their forebears had 50 years ago.

A survey by statisticians of the Metropolitan Life Insurance Company shows that for the girl of 21 years who marries a man five years older, the chances are one in five that she and her husband will survive together for the next half-century. For the bride of 25 years with a husband 30 years old, the chances are one in 10 (*Bulletin,* June).

For the silver wedding anniversary, 25 years from now, the outlook is even better. The bride 26 years old or younger marrying a man five years older has more than three chances in four of celebrating her silver wedding anniversary with her husband.

The brighter outlook for silver and golden wedding anniversaries today compared with that in grandmother's time is largely due, say the statisticians, to the advances in medicine and public health which have greatly added to the expectation of life of the individual, and through this to the anticipated years of married life of each bridal couple.

Science News Letter, August 1, 1942

ASTRONOMY

Double Feature

Eclipse of the Moon and a Meteor Shower Are Among The Attractions in the Evening Skies of August

By JAMES STOKLEY

A TOTAL eclipse of the moon and a shower of meteors are the chief events on the astronomical schedule for the month of August. The eclipse, second of the year, will occur on the evening of Tuesday, August 25, while the meteors will be seen to best advantage in the early morning hours of Wednesday, August 12. These belong to the Perseid shower, they seem to radiate from the constellation of Perseus, which rises in the northeast about midnight.

Thus, perhaps, this month makes up to some extent for the lack of naked-eye planets in the evening sky. However, if you stay up late the night of the eleventh to see the meteors, some of the planets will appear also. Saturn, in the constellation of Taurus, the bull, rises in the southeast about 1:00 a. m. Jupiter, still brighter, follows in Gemini, the twins, about 3:15 a. m., and Venus brightest of all and also in Gemini, about an hour later.

The stars of the August evening are depicted on the accompanying maps. These are made to show the sky at about 11:00 p. m. at the beginning of the month and at 10:00 p. m. in the middle. Vega, almost directly overhead, is the brightest star. It marks the constellation of Lyra, the lyre. Then comes Arcturus, in Bootes, which is in the west, and may be located by following the curved line of the handle of the great dipper.

Antares Is Red

Antares, in Scorpius, the scorpion, low in the south, may be recognized by its distinctly red color. Deneb, in Cygnus, the swan, is high in the eastern sky. It is in a southeasterly direction from Vega. Altair, in the southeast, forms part of Aquila, the eagle, and has one fainter star just above and another just below, which help you locate it.

Actually, there are two eclipses this month, though the first one does not amount to very much. Both earth and moon, which get all their light from the sun, cast long, invisible shadows out into space. These shadows are each in two parts. At the center there is a dark core, called the umbra, into which no direct sunlight reaches. But around this is an outer part—the penumbra—from which the body casting the shadow only partially eclipses the sun.

On August 11, when it is evening in the United States and Canada, the penumbra of the moon's shadow just touches the earth—in the South Pacific Ocean near Antarctica. Now it is midwinter in that part of the world, comparable with February on the northern coast of Alaska, so it is unlikely that any ships will be there. And if they are, good weather is not very probable. Even if the eclipse were observed, all that would be visible at best would be a little nick in the edge of the sun's disk—covering about a twentieth of its diameter. So it will not be much of an eclipse.

Lunar Eclipse

But, though no part of North or South America, Europe, Asia, Africa or Australia will see the partial eclipse of the sun on August 11, a large part of the world will view the total eclipse of the moon two weeks later. Then, on August 25, the moon will have moved halfway around in its earth-encircling orbit, and will enter fully into our shadow. Practically all of North and South America will see it all. The beginning will be visible to Europe and Africa as well as southeastern Asia.

In the accompanying diagram is shown the interesting part of what will happen. When the moon enters the penumbra, at 9:02 p. m., EWT, nothing noticeable will be observed. At 10:01 p. m., as indicated by the small circle at the right, the moon begins to make contact with the umbra, the large shaded circle. An hour later it is completely in the shadow. Then the moon takes on a coppery hue.

The color is an effect of the bending of the sun's light by the earth's atmosphere into the umbra and on the eclipsed moon. Since the atmosphere takes blue rays out of the light in passage—to make the blue sky—that which gets through is reddened.

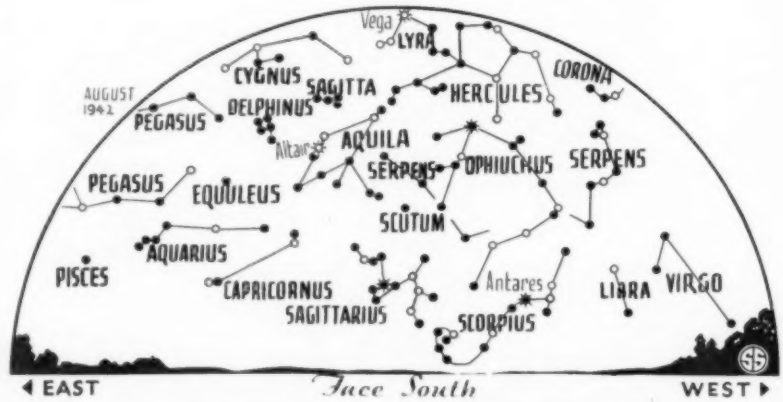
Over at 2.34 a.m.

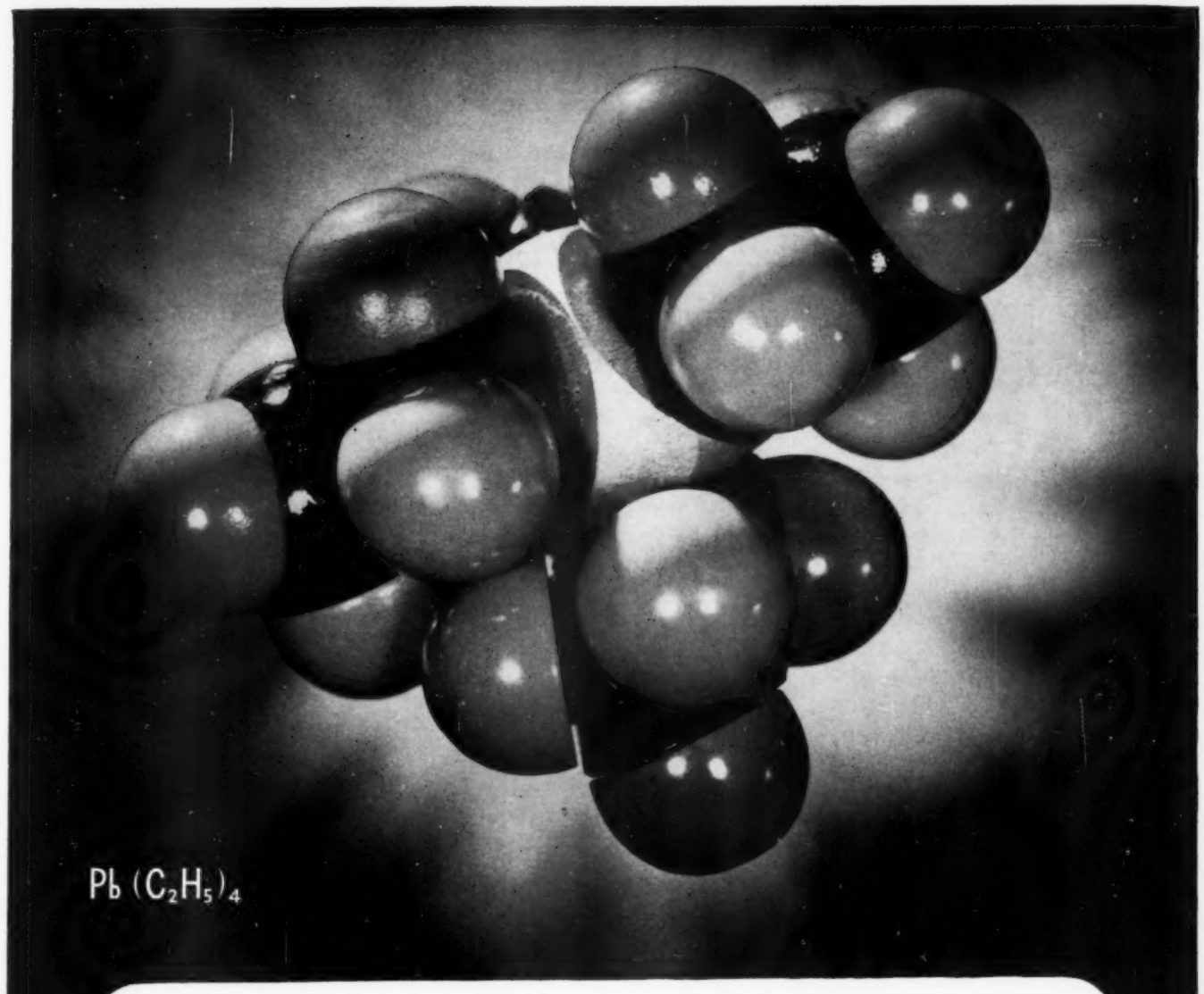
At 12:35 a. m. the moon begins to emerge from the shadow, and an hour after this it is completely out. Since the moon will still be in the penumbra, it will be noticeably darker than usual when full, but it will gradually brighten until 2:34 a. m., when it is out of the shadow entirely, and all phases of the eclipse are over.

Summarizing, the time table is as follows, with Eastern War Time throughout:

	EWT, Aug. 25
Moon enters penumbra	9:02 p. m.
Moon enters umbra	10:01 p. m.
Total eclipse begins	11:01 p. m.
Middle of eclipse	11:48 p. m.
	Aug. 26
End of total eclipse	12:35 a. m.
Moon leaves umbra	1:35 a. m.
Moon leaves penumbra	2:34 a. m.

Such eclipses of the moon are not of great scientific value, but they do make an impressive spectacle to watch. It is particularly interesting to see the curved, and fairly sharp, shadow of the earth on the moon's surface while it is entering





Nobody knows how this works

...BUT IT DOES A TERRIFIC JOB!

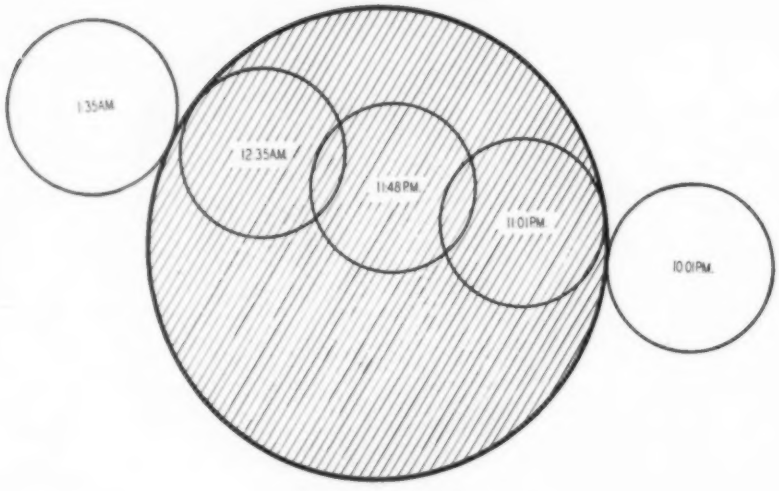
IT HELPS airplanes fly faster, farther and higher. It gives greater power to automobiles, trucks, buses and motorized military equipment. It even helps the farmer's tractor plow more acres per gallon of fuel.

It's one of the ingredients of Ethyl fluid —shown as a chemist's model of a molecule, 100 million times life size. Ethyl fluid, which is made by the Ethyl Corporation, is used by petroleum refiners to improve the antiknock quality (octane number) of aviation and motor gasolines.

Nobody knows exactly why Ethyl fluid raises the antiknock quality of gasoline . . . how a single molecule like the one in the picture can control the combustion of nearly 100,000 molecules of fuel and air inside an engine. But this fluid does such a good job that more than two hundred oil refiners put it into their gasoline — into superior fuels produced through modern refining methods.

The result is an adequate supply of high-octane gasoline—the key to many of the tremendous increases in power and efficiency that have been made in engines for airplanes, automobiles, tractors and military equipment.

ETHYL CORPORATION
Chrysler Building, New York City



PHASES OF ECLIPSE

The interesting part of the total eclipse of the moon on the evening of August 25 is shown in this diagram, prepared by the astronomical staff of the Franklin Institute, Philadelphia. The large shaded circle is the dark core, or "umbra," of the earth's shadow; the small circles represent, at the times indicated the moon, which is moving from right to left, that is, west to east. North is at the top, and the times are all E. W T.

and leaving the umbra—clear proof, if it is needed, that we live on a sphere.

The other feature on the month's bill, the meteor shower, is perhaps somewhat less spectacular than the eclipse, but will still be of considerable interest. We always see more of these meteors, often called "shooting stars," after midnight than before. Then we are on the forward side of the earth, and meet them head-on. They are tiny bits of cosmic dust, that are burned in a flash of light by friction with our atmosphere.

On an ordinary night, in an hour, you should see one or two, but late on the night of August 11, you should see that many a minute. That is because we then pass through one of several swarms—the debris of comets of past ages. Actually they come in parallel paths, but perspective makes them converge in the distance, like the tracks of a railroad. This is toward the constellation of Perseus, hence they seem to radiate from that part of the sky. Of course, a bright moon will cause so much glare that many of the fainter meteors are not visible. This year the moon is new on the 11th (as it must be at the time of a solar eclipse), so it will not offer any competition with the Perseid shower.

Celestial Time Table for August

Saturday, Aug. 1, 12:00 p.m., Venus passes Jupiter. Monday, Aug. 3, 7:04 p.m., moon in last quarter. Thursday, Aug. 6, 4:49 a.m., moon passes Saturn. Friday, Aug. 7, 9:00 a.m., moon farthest, distance 251,900 miles. Sunday, Aug. 9, 1:11 a.m., moon passes Jupiter; 5:16 p.m., moon passes Venus. Tuesday, Aug. 11, 10:28 p.m., new moon; partial eclipse of sun. Wednesday, Aug. 12, early a.m., Perseid meteors. Wednesday, Aug. 25-6, 11:01 p.m. to 12:35 a.m., quarter. Sunday, Aug. 23, 5:00 a.m., moon nearest; distance 226,700 miles. Tuesday-Wednesday, Aug 25-6, 11:01 p.m. to 12:35 a.m., total eclipse of moon. Tuesday, Aug. 25, 11:46 p.m., full moon. Eastern War Time throughout.

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MEDICINE

Bacteriophage Conquering Dysentery in Alexandria

BACTERIOPHAGE, the germ-eater, is conquering bacillary dysentery in Alexandria, Egypt, Dr. Arthur Compton, director and pathologist-in-chief of the Laboratory Service, Alexandria Municipality, reports (*British Medical Journal*).

In Alexandria, he reports, patients with bacillary dysentery died at the rate of 25 out of every 100 in 1928. Since 1938 only about 5 out of every 100 patients with this disease have died. In Cairo and the rest of Egypt the situation has not been so favorable. Case mortality rates for Cairo have varied between a maximum of over 60% in 1928 to a minimum of 25% in 1938.

The difference, in Dr. Compton's opinion, is due to bacteriophage, which physicians of Alexandria now give regularly to patients showing the first signs of dysentery. Since 1930, moreover, the Municipal Public Service in Alexandria has "budgeted annually for commercial bacteriophages for the specific treatment of bacillary dysentery and like conditions in the municipal hospitals and children's clinics.

"Thus the phage therapy (treatment) has been employed in Alexandria on an important scale for at least 12 years," Dr. Compton reports. "In Cairo, phage has not been used to any appreciable extent until recent years and the rest of Egypt may be considered as practically not having known phage therapy at all."

Science News Letter, August 1, 1942

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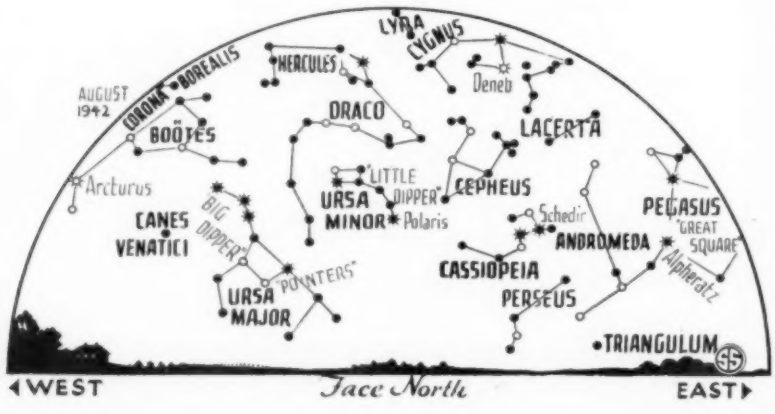
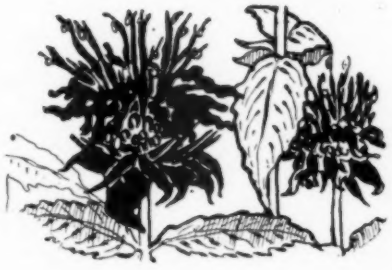


BOTANY

NATURE RAMBLINGS

by Frank Thone



Summer Wildflowers

WILDFLOWERS move more and more into the open as summer advances. Spring flowers are predominantly woodland flowers: violet, spring beauty, trillium, Solomon's seal, Dutchman's breeches, bloodroot, hepatica, anemone, columbine. But if you go into the woods now you will find relatively few flowers, and those are most likely to flourish where the overhead canopy of leaves is broken or thinned, so that patches or filterings of sunlight come through.

If you would find wildflowers in midsummer, you must fare afield rather than into the forest. In open meadows, along roadsides, and railroad right-of-way areas is where you'll find them: goldenrod, wild aster, blazing-star, butter 'n' eggs, Indian paintbrush, horsemint, wild bergamot, daisies, a dozen kinds of wild sunflowers. Ponds and lakes offer arrowleaf, pickerelweed, spatterdock, waterlily, lotus.

There are reasons. One hint is supplied by the clustering of summer woodland flowers around such crumbs of sunlight as find their way down through the overhead canopy. In the spring, the forest floor is essentially open ground. The leafless trunks and branches of the trees do not seriously interfere with either light or wind, so the flowers have their day in the sun. They must make haste, however, for as the leaves unfold overhead they are curtained into summer-long shadow.

One of the notable things about the summer wildflowers of the open is the dominance of one botanical family, the composites. Goldenrod, wild aster, blazing-star, daisies, wild sunflowers all belong to the same cousinship, and a host more might be added. Why this family should be slow-blossoming and prefer open sky and hot sun is not as yet satisfactorily explained.

More easily explained, perhaps, is the presence of many annuals among the later-flowering species, as contrasted with the predominance of perennials among the early flowers of the woods. Since annuals must get started anew each season, and come to full maturity before they can blossom and bear seed, they need more time than is afforded by the few weeks required for the unfolding of tree leaves and the closing of the forest canopy. So the most successful annual species are those that evolved in the open.

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In controlling the *apple maggot fly* advantage is taken of the fact that the female cannot lay eggs until after she has fed on leaf and fruit surfaces, which may be dusted or sprayed with poisons.

America consumes 5,000,000 pounds of *camphor* annually; factories can produce all of it synthetically.

THE NEW NAVY "E"-with-star—awarded first to Bausch & Lomb—is official recognition of continued accomplishment in Production for Victory. It symbolizes a singleness of purpose that justifies any sacrifice you or we may be called upon to make.
Watch Out for Tricky Eyes

Vision for Victory

THE future of the world today depends on American industry's capacity to produce the implements of war. The Soldiers of Industrial Production must be welded into history's most efficient fighting organization before the spectre of aggression can be dispelled.

Because most skills depend on efficient functioning of the eyes, and because nearly one-third of the people of the nation still have uncorrected faulty vision, a valuable public service is performed by calling attention of American workmen to the importance of proper care of their eyes.

Taking as its theme "Vision for Victory," an advertising campaign (one insertion of which is reproduced above) is now appearing in an extensive schedule of nationally-circulated magazines. The program is sponsored by the Better Vision Institute, a non-profit service association, supported by the manufacturing, distributing and professional branches of ophthalmic science.

We also hasten Victory who make minds keener and hands surer through the improvement of human vision.

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PHYSICS

Shortage of Physicists A National Emergency

Large Percentage in Vital War Research Leaves Too Few for Training of Numbers Needed in Future

THE shortage of manpower in physics, especially for teaching, has reached the proportions of a national emergency, the War Policy Committee of the American Institute of Physics declared in a report.

There are only 7,000 physicists in this country. The large proportion of them devoted to vital war research leaves too few for the training of the large numbers of men needed for the operating and maintaining of technical mechanisms like airplane and submarine locators, signalling devices, anti-aircraft fire control, etc.

The Committee, composed of leading physicists, estimates that as many as 200,000 men and women will require some training in physics within a year. These will be mostly next year's college and university students, who expect to enter the Army or Navy reserve training courses to be carried out at these institutions. The teaching load in college grade physics in 1942-43, the Committee believes, will be two to three times greater than the highest ever reached before, and will fall on faculties depleted for war research.

The Committee urged that every possible step be taken to increase our physics manpower and to use the present supply in the most effective manner. They recommended the establishment of government-sponsored teacher-training courses, the adoption of wise occupational policies by the Selective Service System, financial aid to qualified students so that they may continue and finish their studies (especially graduate students who are already shouldering a large part of the teaching load), and use of physicists in the Army and Navy only for work requiring their training.

The Committee complained that there is not sufficient understanding of the importance of physics in the war effort, especially on the part of the general public whose approval is needed, and on the part of some local boards of the Selective Service. They urged that a public relations program be inaugurated to remedy this, and that high Army and Navy officials point out that it is the highest patriotic duty of students and teachers of physics to continue their work.

Science News Letter, August 1, 1942

ENGINEERING

Millions of Kilowatt-Hours Saved From Engine Tests

SEVERAL million kilowatt-hours of electrical energy are being recovered monthly from the power developed by airplane engines on test in one factory alone. This power, formerly wasted, is helping to bolster the supply of electrical energy sorely needed in the war industries.

Every airplane engine is tested before being mounted in the plane for about 12 hours, during which time large quantities of high octane gasoline are consumed. The long test is necessary to insure not only that all parts are mechanically perfect and function properly, but also to break in the engine. Unlike an automobile engine, which can be broken in by slow driving, the airplane must be ready to develop full power at the first take-off—or else.

Formerly a special propeller was attached to the engine and the entire power developed was dissipated in merely churning up the air about the factory. Now an alternating-current generator is attached as "load" and the electrical energy developed is pumped into the power system. In one factory alone, the engines under test developed more than half the power required to operate the entire plant at full capacity.

Many airplane engines of today develop 2,000 horsepower or more, enough to light 30,000 lamps of 50 watts or to supply a small town with all its electrical needs.

The first power-recovery system was developed by General Electric Company in collaboration with Pratt & Whitney Aircraft. Since then several large airplane engine manufacturers have installed the system which, if applied by all of them, would make a substantial contribution to the mounting demand for electric power.

Science News Letter, August 1, 1942

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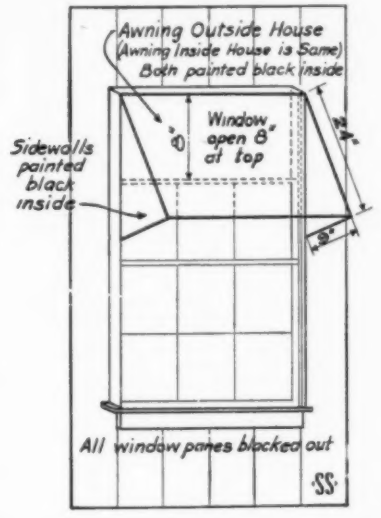
New Machines And Gadgets

Novel Things for Wartime Living

Razor blades can be sharpened without removing them from the holder by means of a device recently patented. It can be applied to razors of standard make, but requires that the cap or last clamping piece be replaced by one of special make. The latter has a thin sheet of sharpening material that lies between it and the blade. When the handle is slightly loosened, the sharpening material can be moved back and forth over the edges of the blade by means of a small handle that projects from the cap. Another recent patent accompishes the same thing but requires special construction of both blade and handle.

A mechanic converted a screwdriver into a cotter-pin spreader. This expedited the job of spreading cotter-pins so that a hundred times as many could be handled in the same period of time as by conventional methods. Any mechanic can build such a cotter-pin spreader merely by heating the end of a screwdriver to redness, hammering it so as to produce a broader point and then grinding to shape. In use the round end of the spreader is inserted into the eye of the cotter-pin. A downward movement of the opposite wedged-shaped end will drive it between the legs of the cotter-pin whereupon a slight twist of the wrist in both directions spreads the pin and finishes the job.

From Hawaii comes a blackout window ventilator which anyone can make and install at home. It consists of a double awning, one outside, the other inside the window. This permits the window to be opened a few inches at the top. The awnings can be made of any black opaque material and being fixed, may be supported by a framework of wooden slats. All the window panes must also be blacked out. Residents of



Hawaii, after experimenting with various blackout methods since Pearl Harbor, have found this one the most effective for the ordinary home. They report that a person directly under the awning can detect a slight glow but it cannot be seen elsewhere from the outside.

Rubber heels have been developed which the manufacturer claims will save 1¼ ounces of compounded rubber and one-fifth of an ounce of steel for each heel. A wooden core is used to attach the heel to the shoe in place of the usual steel inset washers. The new type can be made on standard rubber heel manufacturing machinery and attached by present shoe-making machines as well as by repairmen.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 115.*

Science News Letter, August 1, 1942

CHEMISTRY

Chemically "Toughened" Wool Is Developed

CHEMICALLY "toughened" wool, indigestible to moths and resistant to soap alkalis, has been developed at the National Bureau of Standards by research associates of the Textile Foundation. The "toughening," however, is all inside the wool, for the fibers remain just as soft and pliable as ever.

Secret of the process, it is explained, lies in a rearrangement of sulfur atoms in the chemical composition of the wool substance. In natural wool, the sulfur tie-up is the first thing attacked by the digestive juices of the moths' stomachs, also by the soap alkalis. By making these sulfur structures more stable the whole wool molecule is made more resistant to any kind of chemical attack.

Science News Letter, August 1, 1942

ESSAYS ON THE NEW VORTEX ATOM
by Carl F. Krafft

A chain is no stronger than its weakest link, and a crystal cannot have a rigidity greater than that of the atoms which compose it. Atoms must therefore have crystalline rigidity. It is conceivable that skeletal structures formed of vortex-rings might possess considerable rigidity, but how any condition of crystalline rigidity could exist in the nucleated atom with its widely scattered electrons (not to mention the wave-atom) is beyond the understanding.

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•First Glances at New Books

ETHNOLOGY—HISTORY

WAR BACKGROUND STUDIES: No. 1, Origin of the Far Eastern Civilization—Carl Whiting Bishop, 53 p., illus.; No. 2, The Evolution of Nations—John R. Swanton, 23 p. *Free upon direct application to Smithsonian Institution, Washington, D. C.* (See *SNL*, July 11, p. 22.)

Science News Letter, August 1, 1942

GENERAL SCIENCE

PHYSICAL SCIENCE—William F. Ehret, Leslie E. Spock, Jr., Walter A. Schneider, Carel W. van der Merwe and Howard E. Wahlert—*Macmillan,* 639 p., illus., $3.90. The main purpose of this book is to provide the knowledge of physics, chemistry, astronomy and geology which the cultured man must have to understand the world about him, the scientific method, and the use of mathematics. It is not a popular exposition, but a textbook for college use.

Science News Letter, August 1, 1942

MEDICINE

BABIES ARE FUN — Jean Littlejohn Aaberg—*Wm. Penn Pub. Corp.,* 128 p., illus., $1. Amusingly written, complete and practical guide for the young mother. Would make a welcome gift for a baby shower.

Science News Letter, August 1, 1942

MATHEMATICS

TRIGONOMETRY, PLANE AND SPHERICAL—Miles C. Hartley—*Odyssey Press,* 298 p., 24 p. of answers, $1.60. Correction of number of pages.

Science News Letter, August 1, 1942

SEISMOLOGY

SEISMOLOGY—Perry Byerly—*Prentice-Hall,* 256 p., illus., Trade, $4.65; School, $3.50. A text and reference book on earthquake science. The first part is largely descriptive and requires no mathematical knowledge; the second calls for a little more digging.

Science News Letter, August 1, 1942

CRIMINOLOGY

PRACTICAL FINGERPRINTING — B. C. Bridges—*Funk and Wagnalls,* 374 p., $4. Intended as a textbook for police training schools or for others wishing to learn identification methods. The work carries a foreword by August Vollmer.

Science News Letter, August 1, 1942

PHYSICS

X-RAY CRYSTALLOGRAPHY; An Introduction to the Investigation of Crystals by Their Diffraction of Monochromatic X-Radiation—M. J. Buerger — *Wiley,* 531 p., $6.50. By confining itself to the single crystal and monochromatic X-rays, this subject is covered much more thoroughly than in treatises which attempt to cover a wider field. Important steps in the mathematical treatment are not omitted, many gaps that occur in other works are filled and the explanations are more complete.

Science News Letter, August 1, 1942

CHEMISTRY

PHYSICAL CHEMISTRY FOR STUDENTS OF BIOCHEMISTRY AND MEDICINE—Edward Staunton West—*Macmillan,* 368 p., $5.75. Those parts of physical chemistry that are basic to an understanding of biochemistry have been selected for thorough treatment in this work. Emphasis is also laid on the necessary mathematics.

Science News Letter, August 1, 1942

• Just Off the Press •

DECIDUOUS ORCHARDS—William Henry Chandler—*Lea and Febiger,* 438 p., illus., $4.50.

ELEMENTARY METEOROLOGY FOR AVIATORS, Part one—*Longmans, Green,* 48 p., 40c.

ELEMENTARY PHYSICAL CHEMISTRY — Merle Randall and Leona Esther Young — *Randall and Sons, Berkeley, Calif.,* 455 p., photolith, $4.50.

ELEMENTS OF GEOGRAPHY, Physical and Cultural (2d ed.)—Vernor C. Finch and Glenn T. Trewartha—*McGraw-Hill,* 823 p., illus., $4.

THE GIST OF MATHEMATICS—Justin H. Moore and Julio A. Mira—*Prentice-Hall,* 726 p., Trade ed., $5.35; School, $4.

JOHN TORREY, A Story of North American Botany — Andrew Denny Rodgers III — *Princeton Univ.,* 352 p., $3.75.

KEY TO THE REPTILES AND AMPHIBIANS OF ILLINOIS—Fred R. Cagle—*Museum of Natural and Social Sciences, Carbondale, Ill.,* 35 p., illus., 25c.

MOLECULAR FILMS, THE CYCLOTRON AND THE NEW BIOLOGY—Hugh Stott Taylor, Ernest O. Lawrence and Irving Langmuir—*Rutgers Univ. Press,* 95 p., 24 figures, $1.25.

NAVIGATION AND METEOROLOGY — D. Hay Surgeoner—*Longmans, Green,* 108 p., $1.25.

NEGROES IN BRAZIL; A Study of Race Contact at Bahia—Donald Pierson—*Univ. of Chicago,* 392 p., illus., $4.50.

THE NEW PROJECTION CONTROL — William Mortensen — *Camera Craft,* 123 p., illus., $2.75.

PHYSICAL ELEMENTS OF GEOGRAPHY—Vernor C. Finch and Glenn T. Trewartha—*McGraw-Hill,* 641 p., illus., $3.50.

PSYCHOTHERAPY IN MEDICAL PRACTICE — Maurice Levine—*Macmillan,* 320 p., $3.50.

WARTIME MEALS, How to Plan Them, How to Buy Them, How to Cook Them—Margot Murphy—*Greenberg,* 258 p., $2.

PHYSICS—BIOLOGY

MOLECULAR FILMS, THE CYCLOTRON AND THE NEW BIOLOGY—Hugh Stott Taylor, Ernest O. Lawrence and Irving Langmuir—*Rutgers Univ. Press,* 95 p., 24 figures, $1.25. The interdependence of chemistry, physics and biology, especially in the treatment of disease, is the theme which brings these three addresses of three outstanding scientists, two of them Nobel Prize winners, together in one volume. New results in the treatment of stubborn cancer with neutron rays are described by Dr. Lawrence.

Science News Letter, August 1, 1942

HORTICULTURE

DECIDUOUS ORCHARDS—William Henry Chandler—*Lea and Febiger,* 438 p., illus., $4.50. Ecological approach to the problems of fruit tree handling greatly increases the value of this book to the practical orchardist. Practically all common non-citrus fruits are discussed, as well as the more important nut trees.

Science News Letter, August 1, 1942

AERONAUTICS

AIRCRAFT SPOTTERS' GUIDE, Part I—Harold E. Hartney, ed.—*National Aeronautics Council,* 96 p., illus., 25c. With every unexplained airplane in the sky a potential threat to the safety of all citizens, civilians as well as military personnel have a vital interest in knowing friendly plane from enemy and military plane from civilian. Here is another guide to help you learn to recognize them.

Science News Letter, August 1, 1942

GEOGRAPHY

ELEMENTS OF GEOGRAPHY, Physical and Cultural (2d ed.)—Vernor C. Finch and Glenn T. Trewartha—*McGraw-Hill,* 823 p., illus., $4. In the second edition of this successful text, increased attention is given to the cultural elements of geography.

Science News Letter, August 1, 1942

PSYCHOLOGY

PRINCIPLES OF APPLIED PSYCHOLOGY—A. T. Poffenberger—*Appleton-Century,* 655 p., $4. Although this book by a well-known authority in the field is intended as a college textbook, it will interest the layman, particularly employers and others having responsibility for other individuals. Much of the information can be put immediately to work by the reader to render him more efficient in his work and happy in his leisure.

Science News Letter, August 1, 1942

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